

# Food & Resource Trade and Environmental Issues under the East-Asia Community Concept

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“Land Cover and Land Use Changes in North East Asia:  
Problems of Sustainable Nature Management”

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# Category of Regional Trade Agreement by Dr Bela Balassa

- (integration stage)
- ① **FTA:** no common tariff rate to non-signed countries
  - ② **CUSTOM Union:** common tariff rate to non-signed countries
  - ③ **EPA:** cooperation in various field as well as trade liberalization
  - ④ **Common Market :** free mobility of production factors among members
  - ⑤ **Economic Union :** common economic policy and system



- Type of Regional Trade Agreement
  - a) EU Type ..... stage④:Common Market
    - i) Common Agricultural Policy
    - ii) Unification of Currency
    - iii) Free Mobility of Labor
  - b) NAFTA Type ..... stage ①:FTA



Asia Pacific Community Concept..... stage ? & Type ?



# Asia Pacific Community Concept: 3 cases for the expected members



Proposal (1980s) of PECC, the **Rim Pacific Economic Cooperation Concept** by former Japanese Prime Minister M. Ohira, but, not accepted by China, ASEAN and the Pacific island countries.

ASEAN: members

Brunei	Indonesia
Malaysia	Philippines
Singapore	Thailand
Myanmar	Cambodia
Laos	Vietnam

APEC members

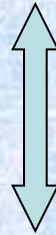
Australia	Brunei	Canada
Chile	China	Hong Kong
Indonesia	Japan	South Korea
Malaysia	Mexico	New Zealand
PNG	Peru	Philippines
<b>Russia</b>	Singapore	Chinese Taipei
Thailand	USA	Vietnam

## Stagnation of WTO and Rapid Increase of FTA

----- since the collapse of New Doha Development Round in Seattle (1999)

### Consistency between FTA/EPA and WTO

Principle of WTO: MFN principle  
Every member country should be equally favored  
by the condition of Most Favorable Nations Treaty



Incompatible  
with each other

FTA/EPA: provides the tariff removal only for the limited number of  
countries who signed the FTA

### Exception clause item 24 in WTO

- 1) to include substantially all traded commodities (90%)
- 2) not to deteriorate the current trade condition with non member countries
- 3) to complete FTA within reasonable period (10 years)

# Difficulty for Australia-Japan FTA

- Only 10% of total number of agricultural commodities protected by relatively high tariff rate in Japan
- No problem for Japan to conclude FTA with any country in theory in terms of compatibility with WTO if this 10% is excluded from tariff removal
- This 10% of agricultural commodities (i.e. sensitive items) are majority of the imported commodities from Australia (beef, dairy, sugar, grain, etc)
- It is difficult to exclude these sensitive items from tariff reduction in the case of Australia-Japan FTA



table 1 major agricultural products imported from Australia

major commodities	unit	2005			
		quantity	amount (mil. ¥)	share	share
total import			2,706,150	100.0	
total rural commodities			604,752	22.3	100.0
agricultural products			473,856	17.5	78.4
forest products			82,983	3.1	13.7
fisheries products			47,912	1.8	7.9
beef	ton	412,493	199,275	7.4	33.0
internal organ, tang, etc	ton	20,035	30,275	1.1	5.0
natural cheese	ton	92,801	29,346	1.1	4.9
wheat	ton	1,107	26,904	1.0	4.4
barley	ton	808	18,038	0.7	3.0
sugar	ton	379	11,684	0.4	1.9
rice	ton	17	1,010	0.0	0.2
total 7 products	ton		316,535	11.7	52.3

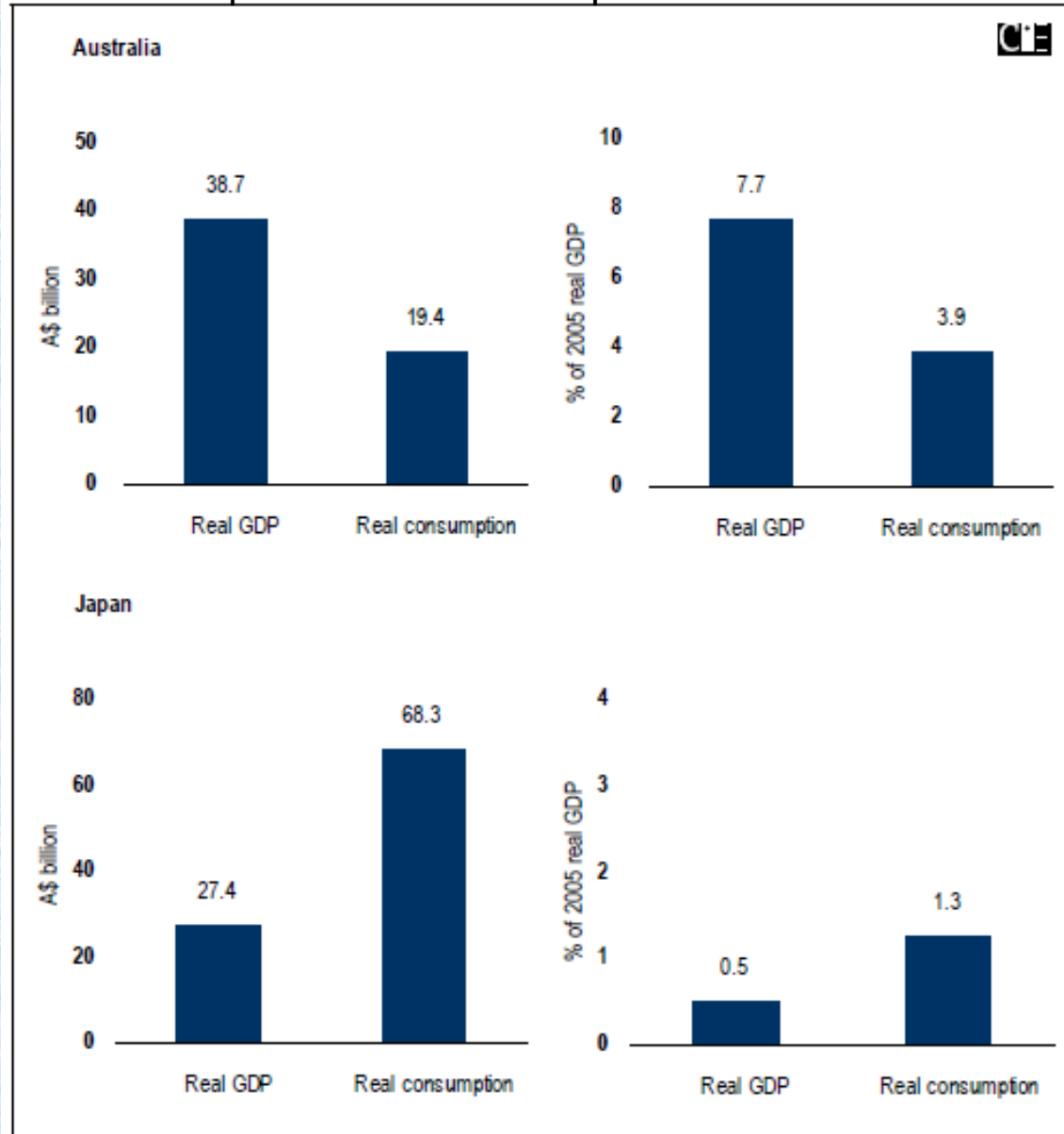
table 2 reduction of Japanese domestic production by the Australia Japan FTA

	production reduction (billion ¥)	note	additionally required budget
wheat	-120	(-99%)	100bil.¥ (budget deficit for whole farm management stabilization policy)
sugar	-130	(-100%)	630bil.¥(from reduced adjustment fee), 670bil.¥(budget deficit for sugar policy)
milk products	-290	(-44%) (milk)	90bil.¥(cover for price reduction of processing milk)
beef	-250	(-56%)	30bil.¥(cover for loss of beef cattle management), 80bil.¥(reduction of beef tariff revenue)
rice etc	-600		
total	-1400		total 430bil.¥
loss of related industries and regional	-1600		
total	-3000		
self sufficiency ratio	40%→30%		

# Economic Impacts of Australia-Japan FTA in both countries

Table 3 loss in the economy of Hokkaido region caused by Australia Japan EPA, (billion \)

commodities	items	loss
beef	production	42.2
	slaughter house	3.4
	other	52.9
dairy	production	236.9
	milk factory	317.6
	other	311.2
wheat	production	85.2
	milling factory	17.9
	other	50.8
beet	production	81.3
	sugar factory	102.5
	other	69.7
total		1,371.6



<sup>a</sup> Over 2005 to 2025 discounted at a 5 per cent real interest rate.

Data source: APG-Cubed modelling simulation.





# Towards Asia Pacific Community Concept

## Hub-and-spoke agreements

- The dynamic global trade model is applied to explore the potential impacts of several scenarios, including:
  - China as a 'hub' – forming bilateral agreements with other countries
  - Joining the 'spokes' – forming a regional agreement
  - Enlarging the 'wheel' – opening the agreement to other countries



## Simulation scenario for modelling 'hub-and-spoke' agreements

1. **Bilateral FTAs:** with China as a 'hub',
2. **Regional FTA :**Joining the 'spokes':
  - Australia and NZ ANZ (2009)
  - ASEAN (2010/2015)
  - Korea (2012)
  - ASEAN, ANZ and Korea (2013)
  - New ASEAN members (2017)
3. **APEC liberalization**
  - Developed countries (2010)
  - Developing countries (2020)

# Simulation results

- We briefly summarise some broad aggregate findings
  - Changes in real GDP
  - Economic welfare
  - Changes in environment
- We find some mixed incentives for countries to expand their trade agreements...

The following figures show the impacts of FTAs on real GDP under each scenarios.  
The impacts are shown as the deviation from the baseline scenario for each countries.

- 1) For both bilateral and regional FTA scenario, positive gap from baseline increase until 2014 and then begin to decline.**
- 2) Regional FTA case become lower than bilateral case after 2015**
- 3) APEC FTA case is lower than bilateral and regional FTA cases until 2017 but it exceeds both cases afterwards and sharply after 2019.**

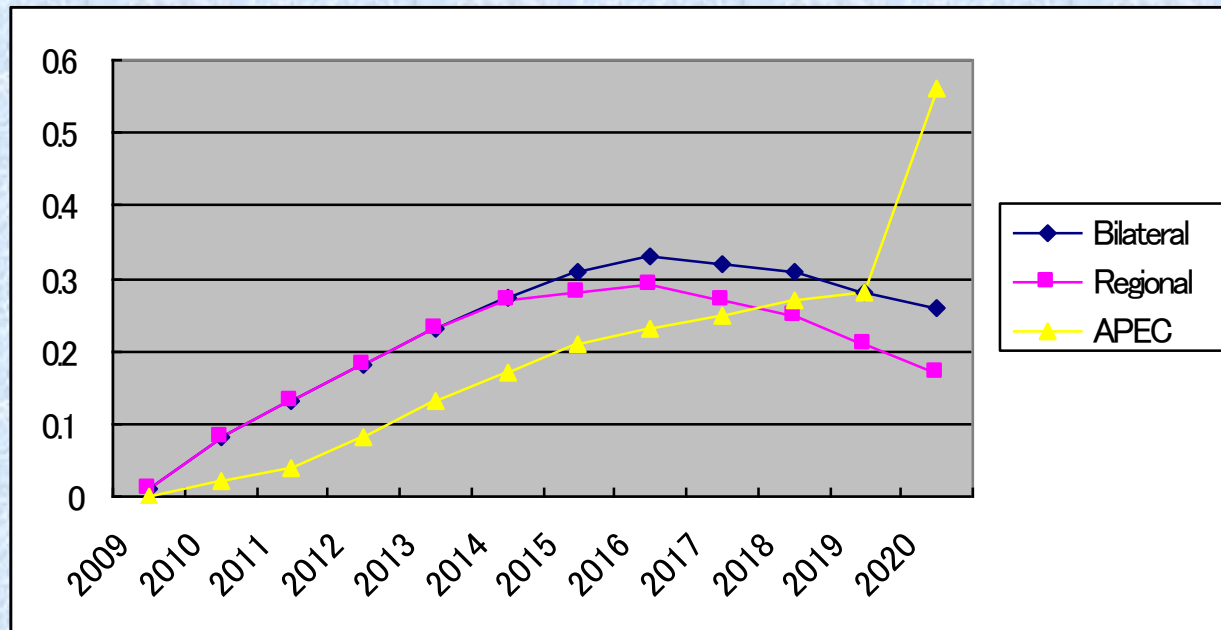


Fig 1. change of Real GDP(%), China



- 1) The positive gap over the baseline under bilateral FTA case keeps declining and become negative after 2014.
- 2) Regional FTA case follows bilateral case until 2012 but begins to increase after 2013.
- 3) APEC FTA case starts to increase from below the former 2 scenarios and keeps increasing until 2018 and then begins to decline to the level higher than the former 2 scenarios by more than 3 times in 2020

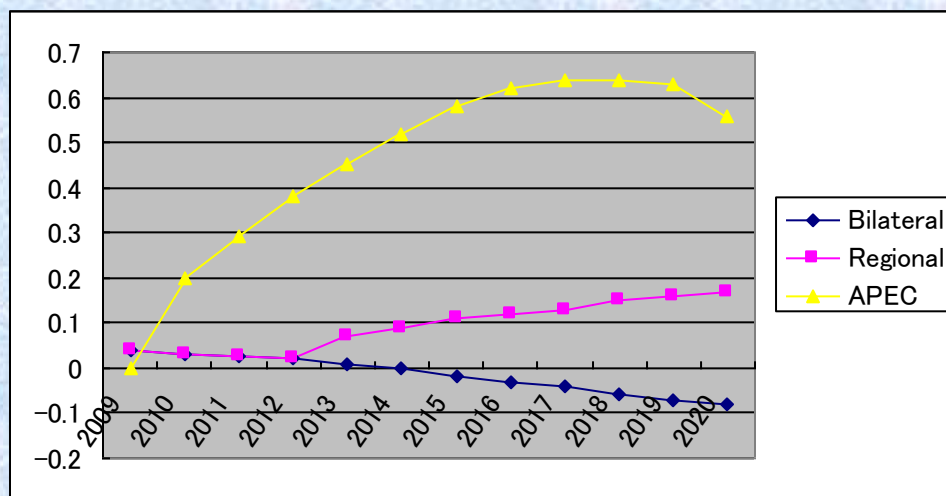


Fig 2. change of Real GDP (%), Australia and New Zealand  
(source) same as the preceding figure

- 1) Both bilateral and regional FTA cases keep increasing at the same pace until 2012 and then regional FTA case exceeds bilateral case after 2013
- 2) APEC FTA scenario case is much lower than the former 2 cases and increases at slow pace until 2019 and begins to increase sharply afterward.

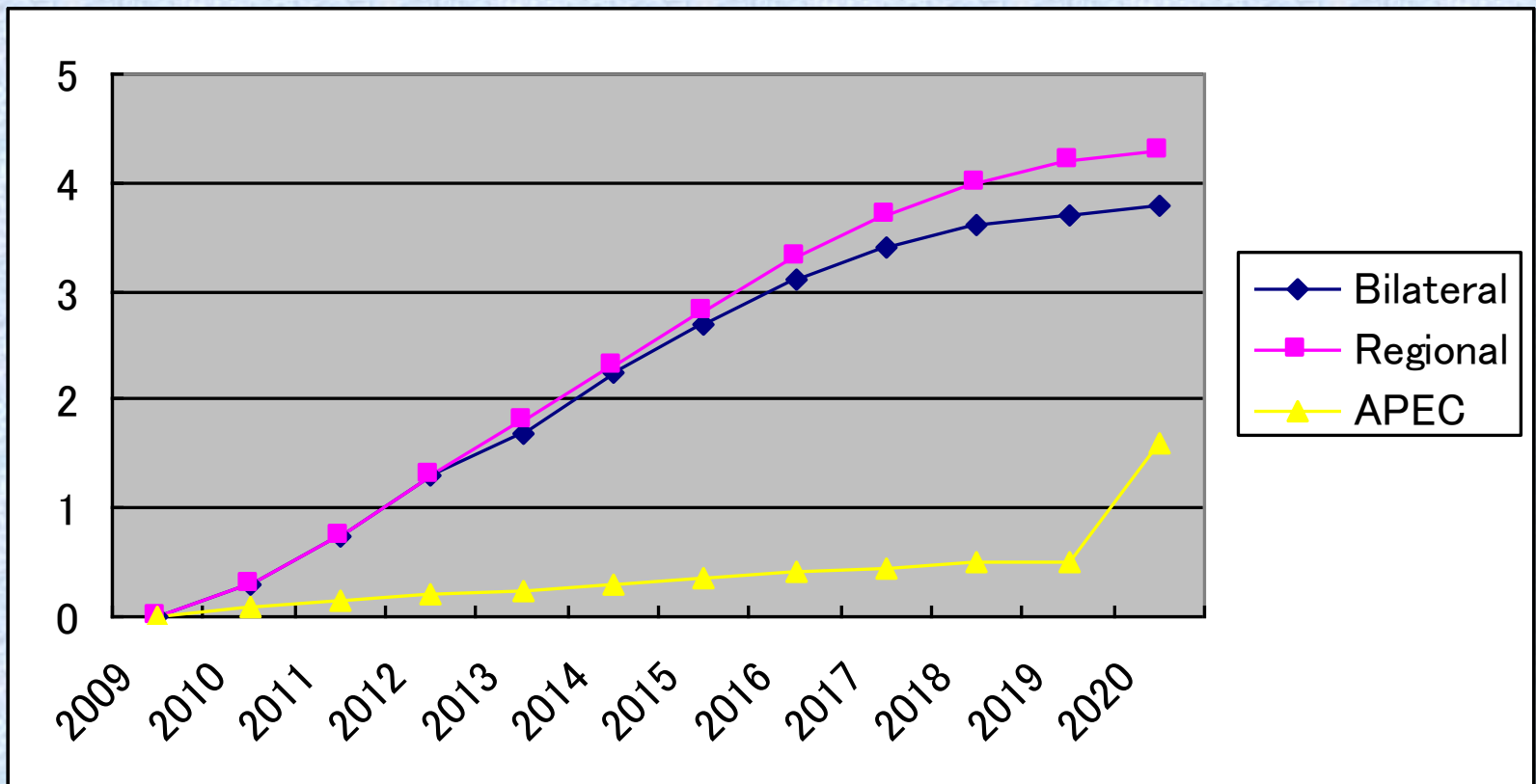


Fig 3. change of Real GDP (%), ASEAN  
(source) same as the preceding figure

- 1) For most countries except China and Japan, the increase of national welfare under Regional FTA scenario is larger than Bilateral Scenario.
- 2) For Australia and New Zealand, the welfare effects disappear due to the deterioration in terms of trade under the APEC FTA scenario.
- 3) For all other countries, the welfare effect is the largest under the APEC FTA scenarios.

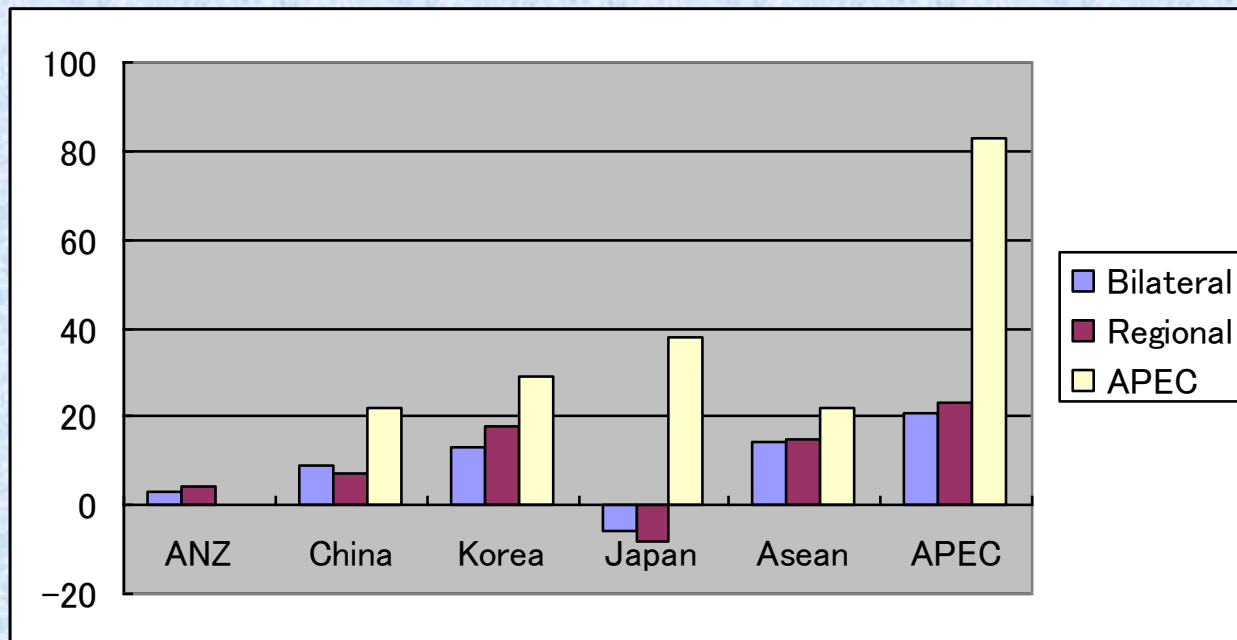


Fig 4. Impact on National Welfare under each scenario, 2020 (billion us\$)  
 (source) same as the preceding figure



## Environmental effects of Trade Liberalization

### Liberalization scenarios

The scenarios reflect the agricultural proposals during the current WTO round. The two scenarios are based on the Doha Draft Ministerial Text at the Hong Kong Ministerial Conference (WTO, 2005b).

item	Scenario 1	Scenario 2
tariff change		
<b>Advanced Areas</b>		
tariff bands 0–25%	–20%	–65%
25–50%	–30%	–75%
50–75%	–35%	–85%
more than 75%	–42%	–90%
<b>Developing Areas</b>		
tariff bands 0–35%	–15%	–25%
35–70%	–20%	–30%
70–100%	–25%	–35%
more than 100%	–30%	–40%
export subsidy change		
<b>Advanced Areas</b>	–100%	–100%
tariff bands	—	—

(source) Rae and Strutt, "The WTO, Agricultural Trade Reform and the Environment: Nitrogen and Agro-chemical Indicators for the OECD", 2007

## the impact of trade liberalization on nitrogen balance

negative effects (more accumulated) only for Korea,  
positive effects ( improved ) for Japan and  
especially positive for Australia and New Zealand.

change of nitrogen balance (thousand tons)

	crop harvest	forage, pature	total nitrogen uptake	animal manure	fertilizer	other nitrogen inputs	total nitrogen inputs	nitrogen balance
Australia	21.0	164.9	185.9	76.6	23.0	-5.3	94.3	-91.5
New Zealand	0.1	-1.2	-1.1	-14.4	9.0	-17.9	-23.3	-22.2
Japan	-17.1	-10.7	-27.8	-24.0	-20.3	0.5	-43.8	-16.0
Korea	-5.9	0.4	-5.5	10.0	-13.4	-0.1	-3.5	1.9

(source) same as the preceding table

If we look at these by each farm sector,

**in Korea**, nitrogen uptake from soil by harvesting crops is reduced and in addition, nitrogen input to soil from animal manure is increased. So, it is accumulated as a whole although it is partially reduced following the reduced fertilizer application.

**in Australia**, nitrogen uptake from soil is increased greatly following the farming sector expansion and this overweigh nitrogen accumulation due to animal manure and fertilizer application, and so, nitrogen accumulations decrease as a whole.

In this way, in Asia Pacific region except Korea, nitrogen excess-accumulation is improved by the trade liberalization.

the effects on the pesticide and forage intensity per farmland areas,

in Japan and Korea environmental stress is improved because the pesticide and forage input per area is reduced due to farm production decrease.

in Australia and New Zealand, environmental stress is increased due to the increase of these input following production expansion

the improvement effects through the mitigation of environmental stress in Japan and Korea where population density is high and the intensive farming is adopted

>

the deteriorating effects through the increased stress in Australia and New Zealand where population density is low and extensive farming is adopted.



the net effects for the environments are positive. Trade liberalization can contribute to improve the environment.

### Change in Agro-chemical or purchased Feed use relative to land (%)

	Rice	Wheat	Coarse grains	Sugar crops	Other crops	Milk	Cattle & sheep
Australia	2.5	0.4	1.6	0.7	0.2	4.3	2.4
New Zealand	—	1.7	2.0	—	1.3	12.1	2.5
Japan	-2.3	-4.2	-2.4	-2.3	-2.0	-5.6	-6.6
Korea	-2.1	-1.5	-2.8	-1.9	-2.1	-2.8	-2.0

(source) same as the preceding table

< Percentage change in demand for agro-chemical or purchased feedstuffs, less percentage change in land demands >



## Input change of farmland and pesticide/fodder

	Wheat		Coarse grains		Other crops		Milk		Cattle & sheep	
	Agro- Chems. +	Agro- Chems.-	Agro- Chems. +	Agro- Chems. -	Agro- Chems. +	Agro- Chems. -	Feeds +	Feeds -	Feeds +	Feeds -
Land +	Korea		Australia New Zealand			Japan	Australia New Zealand Korea	Japan	Australia Korea	
Land -	New Zealand	Australia Japan		Japan Korea		New Zealand Korea				New Zealand Japan

Note: Land+, Feeds+ and Agro-chems.+ imply increased sectoral demands; Land-, Feeds- and Agro-chems.¥ imply the reverse.

(source) same as the preceding table

## Competitive and Complementary Relation in Agricultural Trade in East Asia

### RRCA (Regional Revealed Comparative Advantage)

$$RCA = \frac{X_a^i / X_a}{X_w^i / X_w}$$

$RRCA_a^x > 1, RRCA_b^x > 1$ , both country a,b are competitive in export  
 $RRCA_a^x > 1, RRCA_b^m > 1$ , both country a,b are complementary in trade  
 $RRCA_a^x > 1, RRCA_a^m > 1$ , country a is active in intra-industry trade

Table 5 estimated RRCA among China, Korea and Japan on major 10 agricultural commodities

item	China-Japan		China-Korea		Japan-Korea	
	Export_RRCA	Import_RRCA	Export_RRCA	Import_RRCA	Export_RRCA	Import_RRCA
Meat	2.21	0.86	0.01	0.91	0.35	1.34
Fish	1.66	0.16	0.22	1.72	1.15	1.21
Vegetable & Fruit	2.15	0.03	0.01	2.33	0.55	0.48
Grain, its products	2.39	0.02	0.01	0.61	0.01	3.14
coffee, tea, etc	2.28	0.06	0.04	2.31	0.21	0.49
processed food	1.93	0.11	0.13	2.29	0.77	0.42
other animal/plant product	2.18	0.05	0.16	1.95	0.17	1.05
fat materials	1.06	0.61	1.08	0.64	0.76	2.15
other animal materials	2.23	0.11	0.04	2.27	0.24	0.45
other plant materials	1.82	0.11	0.12	1.99	1.00	0.88

(average for 2002-2004)

For any combination of 3 countries,

many agricultural commodities are in complementary relation and few commodities in competitive relations.



So, considerable rooms for **intra industry trade** among these countries within agricultural sector.

Complementary & Competitive Relation among China, Korea and Japan on major agricultural commodities

Relation	China-Japan	China-Korea	Japan-Korea
Complementary Relation	rice, sorghum, buckwheat, ginger, onion, garlic, pea, carrot, cucumber, strawberry, chesnut, broiler, apple	wheat, corn, sorghum, garlic, carrot, (cucumber), apple, (pear), peach, grape	(strawberry), chili, chestnut, pear, peach, (grape)
Competitive Relation (export)	none	(strawberry), chestnuts	apple, (peach)
Competitive Relation (import)	(pear), peach (grape)	none	(corn), sorghum, garlic, carrot, (cucumber)

(source) same as the preceding table



# Implications for Regional Trade Agreement in Asia Pacific Area

## The Intra-Industry Trade index (IIT),

Korea shows relatively high IIT index with Japan and China and especially, the IIT index between Korea and Japan is remarkably high.

The IIT index between China and Japan is the lowest

and very small for almost every items except fish & shells and fat materials.

It is considerably easy to promote the regional trade agreements between Japan and Korea, and reasonably easy between China and Korea and the most difficult between China and Japan.

The regional trade integration with China as the Hub is indispensable in this region.

Table 10. intra-industry trade index among China, Korea and Japan on major 10 agricultural commodities (2004)

item	China-Japan	China-Korea	Japan-Korea
	2004	2004	2004
Meat	0.01	0.00	0.05
Fish	0.21	0.25	0.45
other animal/plant products	0.02	0.08	0.62
other animal materials	0.01	0.47	0.47
Vegetable & Fruit	0.00	0.18	0.01
coffee, tea, etc	0.02	0.05	0.35
Grain, its products	0.04	0.01	0.76
other plant materials	0.08	0.24	0.27
fat materials	0.89	0.51	0.37
processed food	0.06	0.50	0.34
average	0.13	0.23	0.37

The Intra-Industry Trade index (IIT),

$$= \left\{ \frac{\sum_{i=1}^n ((X_i + M_i) - |X_i - M_i|)}{\sum_{i=1}^n (X_i + M_i)} \right\} \times 100$$

(source) same as the preceding table

(Very low)

(Very high)

The End

Thank you for listening